Material Data Sheet

pro DIAMANT ceramic

Metal Protection System - extremely wear resistant composite materials

Coating an autoclave

The inside of an autoclave has been coated with pro ceramic to protect the metal walls against cavitation and corrosion caused by the hot steam inside the autoclave.

Typical Applications

- extruder, ventilators,
- pipes (especially down pipes), chutes,
- container for bulk materials
- exhaust systems (temperature limit),
- centrifuges, cyclones,
- conveyor systems including screw conveyors,
- all types of mixing machines (container and stirring device) etc.

Product Description

pro ceramic is a paste-like 2-component polymer material filled with high quality ceramic fillers and special, high wear resistant, massive balls. All formulas have high non-sag properties.
Preferred as wear protection of all materials being exposed to extreme wear by impacts of hard particles (like in gases, liquid media or bulk materials). pro ceramic gives a special effective protection if the impacts occurs sidewise. pro ceramic is often being applied as a replacement for ceramic tiles.

Properties

- high wear protection at extreme abrasive exposures
- filled with high-quality ceramic fillers and special, high wear resistant, massive balls
- high non-sag properties at all versions
- layer thicknesses up to 1 cm can be applied at the more coarse grained versions in one step
- the finer grained versions are visco-plastic after curing

Range Of Products

DIAMANT pro ceramic is available in the following versions:

pro ceramic 1913 FL/P	#1913	soft paste-like
pro ceramic 1914 P	#1914	paste-like
pro ceramic 1867 P	#1867	paste-like
pro ceramic 1933 P	#1933	paste-like
pro ceramic 1934 P	#1934	paste-like
pro ceramic 1976 P	#1976	paste-like

Preparation

Roughen the surface by sand blasting (preferred) or grinding up to a roughness of 100 µ +/- 20 and clean with **DIAMANT Cleaner**.

Processing

Mixing
Mix the two components intensively by using a propeller mixer at 250 rpm (small amounts can be mixed by hand).
To avoid errors at mixing we recommend to use the complete service-pack.

Application
First apply a thin adhesion layer with a spatula. Then add the remainder up to a layer thickness of minimum 3 mm.

Curing
Planish the surface during the gelation (ca. 1 - 2 h after mixing the material). This can be done with moistened hands (protected with liquid glove) or with a polyethylene foil being put onto the coating and planished with a roll.
Smoother surfaces can be achieved by applying a surface layer of fine grained material from the pro ceramic-series.

At critical cases the adhesion can be improved by applying an undercoating of **MM Ceram FL** or **MM Ceram 1930**. Both materials contain very fine ceramic fillers.
Each of the different formulas can be put layer by layer on top of the other one.
To match the viscosity or graining individually the ready mixed pro ceramic-versions can be interblended with each other.

Material Selection Criteria

The pro ceramic composite materials are a series of different paste-like formulas differing in the ball sizes and their flowing properties (Details see "Special Applications For The Different Versions" below).

Special Applications For The Different Versions

- If the surface should be very plane and homogeneous the **finer grained versions** (especially #1913) will be applied (limited non-sag properties at #1913).
- The **more coarse grained versions** (especially #1934) are being appllied for back filling at extreme abrasion and cavitation damages and also at wear caused by hard particles.
  The non-sag properties are so high that layer thicknesses up to 1 cm can be applied in one step.
- The versions #1913 and #1867 are visco-plastic after cure which is very good for the adhesion on machine parts which are exposed to strong vibrations.
  The remaining pro ceramic-versions have higher strengths to optimise the wear protection under extreme abrasive conditions.

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Technical Data	1913 FL/P #1913	1914 P #1914	1867 P #1867	1933 P #1933	1934 P #1934	1976 P #1976
colour	grey	grey	white	grey	grey	grey
ball diameter [mm]	0,4 - 0,8	0,5 - 1,0	0,5 - 1,0	0,5 - 1,0	1,0 - 2,0	0,6
characteristics	soft paste-like, excellent smoothing	paste-like, good smoothing, strengthened polymer matrix	paste-like, very good smoothing	paste-like, good smoothing, strengthened polymer matrix, filled with extra hard balls	paste-like, good smoothing, strengthened polymer matrix, filled with extra hard balls	paste-like, good smoothing, strengthened polymer matrix, filled with extra hard balls
mixing ratio (by weight) [g]	78 / 22 3,5 / 1	78 / 22 3,5 / 1	76 / 24 3,2 / 1	78 / 22 3,5 / 1	75 / 25 3 / 1	74 / 26 2,8 / 1
mixing ratio (by volume) [ml]	3,7 / 1	3,6 / 1	3,4 / 1	3,6 / 1	3 / 1	-
specific weight [g/cm³]	2,1	2,1	2,1	2,1	2,1	2,1
pot life [min]	~ 45	~ 45	~ 45	~ 45	~ 45	~ 45
E-Modulus DIN 53457 [N/mm²]	4800	5400	4800	5400	6000	4800
compressive strength [N/mm²]	105	110	101	115	115	105
bending strength [N/mm²]	60	74	65	74	78	60
tensile strength [N/mm²]	35	38	32	38	41	35
curing (full load) [h]	24 (48)	24 (48)	24 (48)	24 (48)	24 (48)	24 (48)
hardness (after 24 h) [Shore D]	> 85	> 85	> 85	> 85	> 85	> 85
temperature resistance (°C) [long-term] [short-term]	 150 200	 150 200	 150 200	 150 200	 150 200	 150 200

All material values are average values and vary due to mixing ratio, material quantity and environmental conditions. The mentioned material values are based on

Shelf life 12 month

package size (cpl.) 100g
250g

Authorized DIAMANT - Partner

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ZERTIFIZIERUNG / CERTIFIED:
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